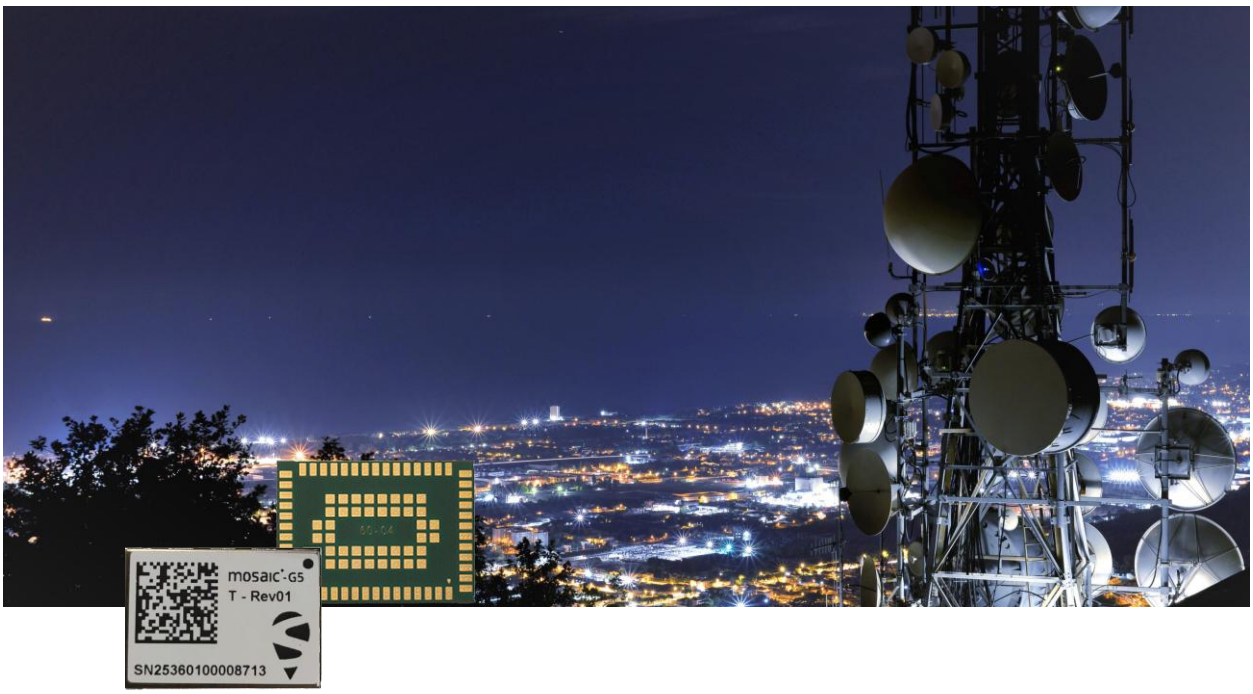
mosaic-G5 T

Ultra-compact multi-frequency GNSS timing module with unmatched resilience



Timing

Infrastructure

Telecommunication network

IoT

Septentrio mosaic-G5 T™ is a compact, low-power GNSS timing receiver module with multi-band, multi-frequency capability. Designed for critical infrastructure and other applications where resilient and precise timing is essential, it ensures maximum security and uptime. It tracks all Global Navigation Satellite System (GNSS) constellations and supports both current and future signals. With a versatile set of interfaces and Septentrio's advanced AIM+ interference mitigation technology, mosaic-G5 T™ delivers industry-leading precision and reliability in an ultra-small form factor.

KEY FEATURES

- **Small size, excellence in performance**
- **All-in-view satellite tracking: multi-constellation, multi-frequency**
- **Superior detection and protection against GNSS jamming and spoofing with industry-leading AIM+ technology**
- **Dedicated inputs for clock and frequency synchronization**
- **Ultra-low power consumption**
- **Cybersecurity features**

BENEFITS

No performance compromises

Sized at only 22.8 x 16.4 mm , mosaic-G5 T™ offers unmatched size to performance ratio. It offers a high-precision solution for time and frequency synchronization under challenging conditions such as during GNSS jamming or spoofing. It offers unmatched resilience thanks to its all-constellation multi-frequency capabilities and AIM+ technology.

Designed for automated assembly

The mosaic-G5 T™ module is designed for high volume automated assembly lines. All interfaces, commands and data messages are fully documented. The RxTools software suite allows convenient receiver configuration and analysis.

Advanced technologies inside

Septentrio's **GNSS+** toolset enables accuracy and reliability in the toughest conditions, allowing you to complete projects with high quality and efficiency. The **GNSS+** toolset of this receiver includes:

- **AIM+ Premium** functionality with enhanced jamming and spoofing protection offering superior narrow, wideband resilience and OSNMA authentication in demanding RF environments.
- **APME+** multipath mitigation to disentangle direct signal and those reflected from nearby structures.
- **RAIM+** integrity and truthful error reporting.

mosaic-G5 T

mosaic
Your positioning cornerstone

septentrio
part of HEXAGON

FEATURES

GNSS technology

789 hardware channels for simultaneous tracking of all visible supported satellite signals:

- GPS: L1C/A, L1C, L2C, L2PY, L5
- GLONASS: L1CA, L2CA, L2P, L3 CDMA
- Beidou: B1I, B1C, B2a, B2b, B2I, B3
- Galileo: E1, E5a, E5b, E6
- QZSS: L1C/A, L1 C/B, L2C, L5
- Navic: L5
- SBAS [1]: EGNOS, WAAS, GAGAN, MSAS
- On module L-band

Galileo High Accuracy Service (HAS) [1,2]
Galileo OSNMA[1]

Septentrio's patented GNSS+ technologies

- **AIM+ Premium** with enhanced jamming and spoofing protection offering superior wideband resilience and OSNMA authentication in demanding RF environments
- **APME+** a posteriori multipath estimator for code and phase multipath mitigation
- **LOCK+** superior tracking robustness under heavy mechanical shocks or vibrations
- **IONO+ Full Protection** provides advanced protection against ionospheric disturbances
- **RAIM+** receiver autonomous integrity monitoring

Protocols

Septentrio Binary Format (SBF)
NMEA 0183 v3.03, V4.0

Interfaces

2 UART (LVTTL, up to 4 Mbps)
USB device (2.0, HS up to 480Mbps)
2 GPIO user programmable
2 Configurable PPS outputs
2 Event markers
Clock sync input
Frequency sync input (10 MHz)

PERFORMANCE

Time precision

PPS resolution	1.4 ns
Event accuracy	< 3 ns

Positioning modes accuracy [3,4]

	Horizontal	Vertical
Standalone	1.2 m	0.9 m
SBAS [1,2]	0.6 m	0.8 m

Velocity accuracy

3 cm/s

Maximum update rate

Position	5 Hz

Latency [5]

< 10 ms

Time to first fix

Cold start [6]	< 35 s
Warm start [7]	< 10 s
Re-acquisition	1 s

Tracking performance (C/N0 threshold)

Tracking	20 dB-Hz
Acquisition	30 dB-Hz

PHYSICAL AND ENVIRONMENTAL

Package

Type	SMT solderable land grid array
Size	22.8 x 16.4 x 2.4 mm
Weight	2.2 g

Electrical

Antenna preamplification range	15-50 dB
Antenna bias voltage	3.0-5.5 V (Built-in current limit 150 mA)
Input voltage	3.3 VDC
Power consumption	0.44 W typ/0.67 W Max

Environmental

Operating temp	-40 to 85° C -40 to 185° F
Storage temp	-55 to 85° C -67 to 185° F
Humidity	5% - 95% (non-condensing)
Vibration	IEC 60721-3-5 Profile 5M3 MIL-STD-810H514.8 – Category 4 MIL-STD-810H516.8 – Procedure I
Certification	CE, FCC, RoHS, WEEE

[1] Future-proof feature which will be roll out by regular software updates
[2] Static positioning only
[3] Open sky conditions
[4] RMS levels
[5] 99.9%
[6] No information available (no almanac, no approx position)
[7] Ephemeris and approx. position known

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